



**Air Quality Permitting
Technical Memorandum**

TIER II Operating Permit No. 001-00187

**INTERSTATE BRANDS CORP. (EDDY'S BAKERY)
BOISE, IDAHO**

Prepared By:

**Kent Berry
Environmental Quality Management, Inc.**

Project No. T2-010019

Date Prepared:

March 27, 2002

Permit Status:

FINAL

LIST OF ACRONYMS

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EPA	Environmental Protection Agency
gr	grain (1 lb = 7,000 grains)
gr/dscf	grains per dry standard cubic feet
HAPS	hazardous air pollutants
IDAPA	A number designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
MACT	Maximum Available Control Technology
MMBtu/hr	million British thermal units per hour
NESHAP	National Emission Standards For Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
OP	operating permit
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter of less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
Rules	<i>Rules for the Control of Air Pollution in Idaho</i>
SIP	State Implementation Plan
SO ₂	sulfur dioxide
SO _x	sulfur oxides
T/hr	tons per hour
T/yr	tons per year
VOC	volatile organic compound

PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01 Sections 404.04 (*Rules for the Control of Air Pollution in Idaho*) (*Rules*) for Tier II operating permits (OP).

PROJECT DESCRIPTION

Interstate Brands Corp. submitted a permit to construct (PTC) application for their Eddy's Bakery in Boise which was constructed in the early 1980's without first obtaining a PTC. Rather than issue a PTC for an existing source, a Tier II OP is being issued instead.

The emission sources at the facility are as follows:

Table 1.1 EMISSION SOURCES

Permit Section	Source Description	Emissions Control(s)
3	Readco Tray Bread Oven, 3.54 MMBtu/hr; natural gas-fired Baker Perkins Model 980 Bun Oven, 3.78 MMBtu/hr; natural gas-fired	None
2	Natural gas-fired boiler, Sellers Model 54200, 8.37 MMBtu/hr Natural gas-fired water heater, Ace Buehler, 1.5 MMBtu/hr Flour Unloading to Silos <ul style="list-style-type: none">• Schick pneumatic pump rated at 30 T/hr• 3 Flour silos – 120,000 lb each	None None Bin vent filters

FACILITY DESCRIPTION

Eddy's Bakery is a large, commercial wholesale bakery that manufactures and distributes yeast-based bread and roll products, the processing of which is described below. There are two lines much the same, one is for rolls and the other is for bread.

1. The bakery receives raw materials in bulk, flour is unloaded pneumatically into three 120,000 pound capacity silos, liquid sugar is stored in a 12,000 gallon storage tank, soybean oil in a 12,000 gallon storage tank, and other ingredients are received in various container forms and stored in a warehouse prior to usage. The flour silos are controlled by bin vent filters at a total flow rate of 90 actual cubic feet per minute (the flow of the pneumatic unloader).
2. The raw ingredients are proportioned into a mixer using a set recipe and mixed together forming a dough.
3. The dough is ultimately divided into loaf and roll sizes, allowed to rise (proofing), and baked in large commercial ovens. Steam from onsite boilers may be added in the oven to enhance product characteristics.
4. The loaves of bread or rolls, once baked, are cooled, sliced, and packaged utilizing commercial baking equipment.
5. The bread and rolls are then put on racks and shipped out to customers for sale.

SUMMARY OF EVENTS

On June 20, 2001, the Idaho Department of Environmental Quality (DEQ) received a PTC application from Interstate Brands Corp., Eddy's Bakery, dated June 11, 2001. On November 19, 2001, the application was deemed complete. A public comment period was held from February 11 to March 13, 2002; no comments were received.

DISCUSSION

1. Emission Estimates

The emissions based on the maximum expected operating hours are presented in the appendix.

2. Modeling

Emissions of ethanol are below the screening emission levels in IDAPA 58.01.01.585. Single source modeling of volatile organic compounds (VOCs) relative to ozone concentrations is not technically feasible.

3. Area Classification

Eddy's Bakery is located in Ada County, Idaho, in AQCR 64. The area is classified as nonattainment for carbon monoxide (CO) and attainment or unclassifiable for all other federal and state criteria air pollutants (i.e., nitrogen oxides (NO_x), VOCs, particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀), and sulfur oxides (SO_x).

4. Facility Classification

The facility is not a designated facility as defined in IDAPA 58.01.01.006.27. The facility is classified as a B source because the actual and potential emissions of all criteria pollutants is less than 100 tons per year (T/yr).

5. Regulatory Review

This OP is subject to the following permitting requirements:

- | | | |
|----|---------------------------------|---|
| a. | <u>IDAPA 58.01.01.401</u> | Tier II Operating Permit |
| b. | <u>IDAPA 58.01.01.403</u> | Permit Requirements for Tier II Sources |
| c. | <u>IDAPA 58.01.01.404.01(c)</u> | Opportunity for Public Comment |
| d. | <u>IDAPA 58.01.01.404.04</u> | Authority to Revise or Renew Operating Permits |
| e. | <u>IDAPA 58.01.01.406</u> | Obligation to Comply |
| f. | <u>IDAPA 58.01.01.470</u> | Permit Application Fees for Tier II Permits |
| g. | <u>IDAPA 58.01.01.625</u> | Visible Emission Limitation |
| h. | <u>IDAPA 58.01.01.650</u> | General Rules for the Control of Fugitive Dust |
| i. | <u>IDAPA 58.01.01.677</u> | Particulate Matter from Minor and Existing Fuel-burning Equipment |

6. Permit Conditions

a. Emission Limits – Baking Ovens

To ensure the source is a minor source, VOC emissions from the baking ovens are limited to 67.1 T/yr. Compliance is determined by monthly recordkeeping using DEQ-approved emission factors used in the permit application.

b. Emission Limits – Natural Gas Combustion Sources

The baking ovens, water heater, and boiler are subject to the 20% opacity limit in IDAPA 58.08.01.01.625 and 0.015 grains per dry standard cubic foot (gr/dscf) in IDAPA 58.01.01.677. These requirements are covered in the facility-wide conditions of the permit. No monitoring, recordkeeping or reporting conditions are included for these requirements because of the extremely small likelihood of a violation for these minor combustion sources.

7. AIRS

AIRS/AFS^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

AIR PROGRAM	SIP ^c	PSD ^d	NSPS ^e (Part 60)	NESHAP ^f (Part 61)	MACT ^g (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
POLLUTANT							
SO ₂ ^h	B						A
NO _x ⁱ	B						A
CO ^j	B						N
PM ₁₀ ^k	B						N
PT (Particulate) ^l	B						NA
VOC ^m	B						A
THAP (Total HAPs) ⁿ	B						NA
APPLICABLE SUBPART							

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 T/yr threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

^c State Implementation Plan

^d Prevention of Significant Deterioration

^e New Source Performance Standards

^f National Emission Standards for Hazardous Air Pollutants

^g Maximum Achievable Control Technology

^h sulfur dioxide

ⁱ nitrogen oxides

^j carbon monoxide

^k particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

^l particulate matter

^m volatile organic compounds

ⁿ hazardous air pollutants

FEES

Tier II fees apply to this facility in accordance with IDAPA 58.01.01.470. The facility has paid the required \$500.00 for the Tier II OP.

RECOMMENDATIONS

Based on the review of the application materials, and all applicable state and federal regulations, staff recommends DEQ issue a final Tier II OP to Interstate Brands Corp., Eddy's Bakery. A 30-day public comment period on the air quality aspects of the proposed OP has been provided in accordance with IDAPA 58.01.01.404.01.c.

KB/MS:bh

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cc: Matt Stoll, Boise Regional Office
 Kent Berry, EQM

EMISSION ESTIMATES

**EDDY'S BAKERY
BOISE, IDAHO**

CALCULATIONS FOR CRITERIA POLLUTANTS:

Interstate Brands Corporation
380 Five Mile Road
Boise, ID. 83713

BASIS: EPA AP/42 Factors as listed, will be used for all equipment at this facility.

12 pounds particulate/MMCUFT of natural gas
100 pounds NOX/MMCUFT of natural gas
0.6 pounds SOX/MMCUFT of natural gas
21 pounds CO/MMCUFT of natural gas
8 pounds VOC/MMCUFT of natural gas
.00049 pounds particulate/Ton of flour unloaded (starch factor)

Sellers Boiler - Model Number SY200

Boiler rated at 8,370,000 BTU/ HR, using 1000 BTU/CUFT of natural gas the boiler burns 8,370 CUFT/HR of natural gas. The boiler operates 24 hours per day, 7 days per week and 52 weeks per year or 8736 hours per year. All calculations are based on rated capacity not actual usage.

Part. $12 \times 8,370 / 1,000,000 = 0.1004 \text{ lb/hr}$
 $0.1004 \times 8736 / 2000 = 0.44 \text{ tons/yr}$

NOX $100 \times 8,370 / 1,000,000 = 0.837 \text{ lb/hr}$
 $0.837 \times 8736 / 2000 = 3.66 \text{ tons/yr}$

SOX $0.6 \times 8370 / 1,000,000 = 0.005 \text{ lb/hr}$
 $0.005 \times 8736 / 2000 = 0.022 \text{ tons/yr}$

CO $21 \times 8370 / 1,000,000 = 0.1758 \text{ lb/hr}$
 $0.1758 \times 8736 / 2000 = 0.77 \text{ tons/yr}$

VOC $8 \times 8370 / 1,000,000 = 0.067 \text{ lb/hr}$
 $0.067 \times 8736 / 2000 = 0.29 \text{ tons/yr}$

Bread Oven - Readco Tray Oven

Oven rated at 3,540,000 BTU/ HR, using 1000 BTU/CUFT of natural gas the boiler burns 3,540 CUFT/HR of natural gas. The oven operates 10 hours per day, 5 days per week and 52 weeks per year or 2600 hours per year. All calculations are based on rated capacity not actual usage.

Part. $12 \times 3540 / 1,000,000 = 0.043 \text{ lb/hr}$
 $0.043 \times 2600 / 2000 = 0.06 \text{ tons/yr}$

$$\begin{aligned}\text{NOX } 100 \times 3540 / 1,000,000 &= 0.354 \text{ lb/hr} \\ 0.354 \times 2600 / 2000 &= 0.46 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{SOX } 0.6 \times 3540 / 1,000,000 &= 0.0021 \text{ lb/hr} \\ 0.0021 \times 2600 / 2000 &= 0.003 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{CO } 21 \times 3540 / 1,000,000 &= 0.074 \text{ lb/hr} \\ 0.074 \times 2600 / 2000 &= 0.1 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{VOC } 8 \times 3540 / 1,000,000 &= 0.028 \text{ lb/hr} \\ 0.028 \times 2600 / 2000 &= 0.036 \text{ tons/yr}\end{aligned}$$

VOC from bread (ethanol) using EPA ACT Formula

$$\text{VOC} = \{(0.95) \times (\text{yeast \%}) + (0.195) \times (\text{total ferm. time}) + 1.90\} \times (\text{tons of production})$$

Yeast % for highest bread product is 4.12%

Total fermentation time for bread is 3.5 hours

Production is 8,244 tons/ year or 3.17 tons/hr (actual year production)

$$\begin{aligned}\text{VOC } \{(0.95) \times (4.12) + (0.195) \times (3.5) + 1.90\} \times 3.17 &= 20.59 \text{ lbs/hr} \\ 20.59 \times 2600 / 2000 &= 26.77 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{VOC } 20.59 + 0.028 &= 20.62 \text{ lbs/hr total} \\ 26.77 + .036 &= 26.81 \text{ tons/yr total}\end{aligned}$$

Ace Buchler Hot Water Heater - Model Number BISE

Hot water heater is rated at 1,500,000 BTU/ HR, using 1000 BTU/CUFT of natural gas the boiler burns 1,500 CUFT/HR of natural gas. The boiler operates 24 hours per day, 7 days per week and 52 weeks per year or 8736 hours per year. All calculations are based on rated capacity not actual usage.

$$\begin{aligned}\text{Part. } 12 \times 1,500 / 1,000,000 &= 0.018 \text{ lb/hr} \\ 0.018 \times 8736 / 2000 &= 0.079 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{NOX } 100 \times 1,500 / 1,000,000 &= 0.15 \text{ lb/hr} \\ 0.15 \times 8736 / 2000 &= 0.655 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{SOX } 0.6 \times 1,500 / 1,000,000 &= 0.0009 \text{ lb/hr} \\ 0.0009 \times 8736 / 2000 &= 0.004 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{CO} \quad & 21 \times 1,500 / 1,000,000 = 0.032 \text{ lb/hr} \\ & 0.032 \times 8736 / 2000 = 0.138 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{VOC} \quad & 8 \times 1,500 / 1,000,000 = 0.012 \text{ lb/hr} \\ & 0.012 \times 8736 / 2000 = 0.052 \text{ tons/yr}\end{aligned}$$

Bun Baker Perkins Oven - Model Number 980

Oven rated at 3,780,000 BTU/ HR, using 1000 BTU/CUFT of natural gas the boiler burns 3,780 CUFT/HR of natural gas. The oven operates 12 hours per day, 5 days per week and 52 weeks per year or 3,120 hours per year. All calculations are based on rated capacity not actual usage.

$$\begin{aligned}\text{Part.} \quad & 12 \times 3,780 / 1,000,000 = 0.045 \text{ lb/hr} \\ & 0.045 \times 3,120 / 2000 = 0.07 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{NOX} \quad & 100 \times 3780 / 1,000,000 = 0.378 \text{ lb/hr} \\ & 0.378 \times 3,120 / 2000 = 0.59 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{SOX} \quad & 0.6 \times 3780 / 1,000,000 = 0.0023 \text{ lb/hr} \\ & 0.0023 \times 3,120 / 2000 = 0.004 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{CO} \quad & 21 \times 3780 / 1,000,000 = 0.079 \text{ lb/hr} \\ & 0.079 \times 2600 / 2000 = 0.123 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{VOC} \quad & 8 \times 3780 / 1,000,000 = 0.03 \text{ lb/hr} \\ & 0.03 \times 3,120 / 2000 = 0.047 \text{ tons/yr}\end{aligned}$$

VOC from buns (ethanol) using EPA ACT Formula

$$\text{VOC} = \{(0.95) \times (\text{yeast \%}) + (0.195) \times (\text{total ferm. time}) + 1.90\} \times (\text{tons of production})$$

Yeast % for highest bun product is 3.28%

Total fermentation time for buns is 3.0 hours

Production is 6,496 tons/ year or 2.08 tons/hr (actual year production)

$$\begin{aligned}\text{VOC} \quad & \{(0.95) \times (3.28) + (0.195) \times (3.0) + 1.90\} \times 2.08 = 11.65 \text{ lbs/hr} \\ & 11.65 \times 3,120 / 2000 = 18.174 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{VOC} \quad & 11.65 + 0.03 = 11.68 \text{ lbs/hr total} \\ & 18.174 + .047 = 18.221 \text{ tons/yr total}\end{aligned}$$

Flour unloading system is rated at 30 TPH maximum with normal maximum operating at 15 TPH. Annual tons is 8,476 unloaded over a period of 12 hours per day, 3 days per week for 52 weeks a

year, for a total of 1872 operating hours per year. Normal operating tons per hour on an average would be 4.53 TPH.

Part. $.00049 \times 4.53 = .0222 \text{ lbs/hr.}$
 $.0222 \times 1872 / 2000 = .0208 \text{ tons/yr.}$

ABBREVIATED AIRS DATA ENTRY SHEET

Name of Facility: Interstate Brands Corp. Eddy's Bakery
AIRS/Permit #: 001-00187
Permit Issue Date: 4/26/02

*Source/Emissions Unit Name (25 spcs)
Program

(Please use name as indicated in permit)

SCC #

(8 digit #)

Air

(SIP/NESHAP/
NSPS/PSD/
MACT)

* Readco Tray Bread Oven
Perkins Bun Oven

30203202

30203202

SIP

SIP

RETURN TO PAT RAYNE
AIRS-PT.LST (6/01)